

Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554

RECEIVED  
JUL 19 1996

In the Matter of )

)  
Amendment of Parts 2 and 15 of the )  
Commission's Rules Regarding Spread )  
Spectrum Transmitters )

ET Docket No. 96-8  
RM-8435, RM-8608, RM-8609

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF SECRETARY

REPLY COMMENTS OF ITRON, INC.

DOCKET FILE COPY ORIGINAL

Itron, Inc. (Itron), by its attorneys, submits this reply to the comments filed in the above-referenced proceeding. In the Notice of Proposed Rulemaking (NPRM) in this proceeding, the Commission asked, among other things, whether it should amend its spread spectrum frequency hopping regulations to allow for the operation of short duration transmission systems under Section 15.247.<sup>1</sup>

Itron, in its initial comments, supported such an amendment. Specifically, Itron suggested that short duration transmission systems should be allowed to operate in the 902-928 MHz band without formal hopping synchronization and with fewer than 25 channels per transmission sequence, provided that a minimum of 25 channels is uniformly and pseudorandomly used over time. Output power levels would be equivalent to those allowed for frequency hoppers under Section 15.247. This approach, Itron noted, would promote optimum spectrum usage and allow manufacturers to offer high-performance wireless solutions using short duration transmission radios in the increasingly congested 902-928 MHz band.

Several parties joined with Itron in supporting rule modifications that would allow greater design flexibility for short duration transmission systems. A few, however, disagreed, calling instead for a maintenance of the *status quo*. Itron herein responds to the comments filed by these parties.

DISCUSSION

**I. Itron's Proposed Modification To Section 15.247.**

As Itron explained in its initial comments, the current rule promotes inefficient spectrum usage. The principal effect of forced synchronization for short duration systems is additional RF emissions with no actual increase in the

<sup>1</sup> See NPRM ¶¶ 39-40.

2411

information communicated by the system. Itron suggested, therefore, that systems which can transmit all information in less than 400 ms, corresponding to the maximum hopping channel occupancy time of 400 ms should be free from channel synchronization requirements. Without synchronization, short duration systems would be required to use alternative strategies such as parallel receiver banks, to receive transmitted information. Although no synchronous hopping process is used, such alternative strategies fully meet the spirit of spread spectrum operation in that the transmit and receive bandwidths are similar and an attempt is made to receive all messages that are intended to be received.

Similarly, the rule requiring a minimum number of frequency hops during a transmission session can result in unnecessary emissions. Itron proposed, therefore, that there be no minimum requirement on the number of frequency hops actually made during any one transmission sequence, provided that the system is capable of operating on the established minimum number of frequencies, the minimum channel spacing requirements are maintained, and the transmitter utilizes all frequencies in pseudo-random sequence.

These proposals would allow for the operation of short duration transmission systems under Section 15.247 without compromising the use of the spectrum by devices already operating under the current rules and with full regard for the fundamental usage compatibility principles of spread spectrum operation.

## **II. The Comments Are Consistent With Itron's Proposed Rule Changes.**

Several of the parties filing comments agreed generally that short duration transmission systems should be allowed to operate at the higher power levels available under the Commission's spread spectrum regulations. R A M A R Technology, for instance, urged the Commission to modify Section 15.231(e) in several respects so that short duration transmission systems could transmit at power levels comparable to those available under Section 15.247.<sup>2</sup> Similarly, Cylink and Master Lock urged the Commission to permit the operation of short duration transmission systems under Section 15.247, so long as the systems hop on a pseudo-random basis if presented with a data stream longer than can be accommodated in a

---

<sup>2</sup> See Comments of R A M A R Technology, Ltd. at 2-3.

single hop.<sup>3</sup> As Master Lock noted, “the length of the data stream may be very short, but the message conveyed could be a matter of the greatest urgency.”<sup>4</sup>

These suggestions are entirely consistent with Itron’s proposal. The current limitations on short duration systems needlessly constrain the design and use of such systems. So long as a short duration system does not transmit a data stream that is longer than the maximum channel occupancy time under the frequency hopping rules, there is no reason that the system should be required to hop or that it should be required to transmit at a lower output power.<sup>5</sup> Itron’s proposal addresses this inefficiency.

Other parties have supported the operation of short duration transmission systems under Section 15.247, but have proposed to allow such operation pursuant to unnecessarily complex or restrictive rules. Alliant Techsystems, for example, urged the Commission to authorize under Section 15.247 the use of public safety devices that use infrequent (less than 5 milliseconds at an average rate of less than .1 transmission per hour) short burst transmissions, whether they frequency hop or not.<sup>6</sup> Although well intentioned, Alliant’s proposal is far too limited to have any general beneficial effect on Part 15 technologies in the 902-928 MHz band.

First, there is no reason to limit the flexibility provided by the proposed changes to technologies used in public safety applications. The issue presented by the NPRM is whether short duration Part 15 technologies can be operated at the power levels permitted under Section 15.247 without creating undue interference to other systems. Nothing turns upon whether there is market demand or whether government agencies demand the technologies in question.<sup>7</sup>

Second, the definition suggested for “infrequent, short-burst transmissions” is unnecessarily restrictive. As long as the individual transmissions are no longer than the maximum hopping channel occupancy time allowed under Section 15.247,

---

<sup>3</sup> See Comments of Master Lock Company at 3; Comments of Cylink Corporation at 13.

<sup>4</sup> Comments of Master Lock at 2.

<sup>5</sup> For this reason, the approach suggested by Cylink and Master Lock should recognize that, if a short duration transmission system is designed to ensure that the transmitter never is presented with a data stream longer than can be accommodated in a single hop, it need not have any technology built in to it to accommodate a second, synchronized pseudo-random hop.

<sup>6</sup> See Comments of Alliant Techsystems, Inc., at 5.

<sup>7</sup> Itron’s short duration transmission systems, for instance, save public utilities millions of dollars in meter reading costs each year, which in turn helps to control increasing energy costs to consumers. On a pure cost-benefit basis, it will be hard to find a system that can match the Itron meter reading system.

there is no reason that a “hop” to another channel should be required. Further, although a duty-cycle limit will help to ensure that these devices do not transmit continuously, the limit of .1 transmission per hour eliminates many useful applications for short duration transmission systems. Itron’s meter transmitters, for instance, transmit eight 6 ms messages every 11 seconds while they are being interrogated by the meter reading unit, which is itself an infrequent (*e.g.*, monthly) occurrence. Thus, although Itron agrees with Alliant’s characterization of the current Section 15.247 rule as ‘overly restrictive,’<sup>8</sup> Alliant’s proposal suffers the same flaw.

Nonetheless, and despite the variety of approaches offered, there appears in the comments a general agreement that short duration transmission systems should be allowed to operate under Section 15.247. The few parties that have resisted any modification to Section 15.247 do so primarily because they misunderstand the spectrum sharing abilities of short duration transmission systems.

ADTRAN, for example, argues that “one-way, uncoordinated networks of one-hoppers could lead to severe interference that would be bursty, difficult to identify, and nearly impossible to compensate for or avoid.”<sup>9</sup> Similarly, the American Petroleum Institute supports the retention of the prohibition on short duration transmission systems under Section 15.247 because it will “prevent the proliferation of technically-inferior, single frequency radios.”<sup>10</sup> These parties have vastly overestimated the level of RF interference that will be engendered by short duration transmission systems.

There is nothing inherently “technically inferior” about short duration transmission systems. As Itron explained in its initial comments, these systems may provide services that more formal frequency hoppers are incapable of providing in a cost-efficient and spectrum-efficient manner. The objections voiced by these parties, in essence, assume the conclusion — that short duration systems will be poor frequency sharers. The contrary is true. There is nothing more or less “bursty” or that makes one-hoppers more “difficult to identify ... and avoid” than any single hop of other spread spectrum technologies. Indeed, short-duration systems facilitate avoidance by limiting the amount of air-time required of the

---

<sup>8</sup> Comments of Alliant at 2.

<sup>9</sup> Comments of ADTRAN at 5.

<sup>10</sup> Comments of the American Petroleum Institute at 6.


system. As long as there is some reasonable limit on duty-cycle and transmission time to prevent these short-duration systems from becoming continuous transmission systems, there is no reason that they cannot operate compatibly with other spread spectrum technologies under Section 15.247. Itron's proposal would permit such operation.

#### CONCLUSION

For the reasons set forth herein and in its initial comments, Itron urges the Commission to allow the operation of short duration transmission systems under Section 15.247 of its rules by eliminating the need for transmitter/receiver frequency synchronization for such systems and by eliminating the minimum hopping requirement.

Respectfully submitted,

ITRON, INC.

By:  /s/ Henrietta Wright

Henrietta Wright  
W. Kenneth Ferree

GOLDBERG, GODLES, WIENER & WRIGHT  
1229 Nineteenth Street, NW  
Washington, DC 20036  
(202) 429-4900

Its Attorneys

July 19, 1996